



U.S. Department of Energy
Energy Efficiency
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List of Acronyms

- BED: Building Energy Databook
EIA: Energy Information Administration
AEO: Annual Energy Outlook
EPRI: Electric Power Research Institute
GRI: Gas Research Institute
DOE: Department of Energy
R & D: Research and Development
OBCS: Office of Buildings and Community Systems
FEMP: Federal Energy Management Program
OBT: Office of Building Technologies
BTS: Office of Building Technology, State and Community Program
BT: Building Technologies Program
NEP: National Energy Policy
EERE: Office of Energy Efficiency and Renewable Energy
HUD: Housing and Urban Development
PATH: Partnership for Advanced Technology in Housing
ASERTTI: Association of State Research and Technology Transfer Institute
ZEB: Net-Zero Energy Buildings
AC/HP: Air Conditioner/Heat Pump
ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers
TD: Technology Development
AOP: Annual Operating Plan
BEOpt: Building Energy Optimization Tool
GPRA: Government Performance Results Act of 1993
NEMS: National Energy Modeling System
PV: Photovoltaic
DEER: Distributed Energy and Electric Reliability
FEMP: Federal Energy Management Program
WIP: Weatherization and Intergovernmental Program
NETL: National Energy Technology Laboratory
HVAC: Heating, Ventilation, Air Conditioning
ARI: Air-Conditioning and Refrigeration Institute
AET: Appliances and Emerging Technologies
EPA: Environmental Protection Agency
RO: Regional Office
FTC: Federal Trade Commission
EPCA: Energy Policy and Conservation Act of 1975
EPAct: Energy Policy Act of 1992
Epact 2005: Energy Policy Act of 2005
SDHV: Small Duct High Velocity
NAECA: National Appliance Energy Conservation Act of 1987
ECPA: Energy Conservation and Production Act



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ICC: International Code Council

IECC: International Energy Conservation Code

MEC: Model Energy Code

IESNA Illuminating Engineering Society of North America

AIA: American Institute of Architects

WIP: Weatherization Intergovernmental Programs

CBECS: Commercial Buildings Energy Consumption Survey

NC3: New Commercial Construction Characteristic

FEMP: Federal Energy Management Program

RESNET: Residential Energy Services Network

NBI: New Building Institute

LEED: Leadership in Energy and Environmental Design



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Introduction: Program Manager's Outlook

The next five years, as outlined in this Building Technologies Program Multi-Year Program Plan (MYP), will be an important time in improving the performance of the Nation's buildings. Increasing the energy efficiency of residential and commercial buildings leads to increased energy conservation by reducing the rate of consumption of oil, natural gas, and electricity. The relative reduction in energy consumption decreases America's vulnerability to energy supply disruptions and energy price spikes. With our Nation's annual energy bill for residential and commercial buildings reaching \$270 billion in 2000, the economic impacts of lowering energy use can be enormous.¹

In support of the President's policies and initiatives, we have embraced the strategic goal of developing net zero energy buildings to reduce national energy demand. We have defined our strategic goal as:

To create technologies and design approaches that enable net-zero energy buildings at low incremental cost by 2025. A net zero energy building is a residential or commercial building with greatly reduced needs for energy through efficiency gains, with the balance of energy needs supplied by renewable technologies. These efficiency gains will have application to buildings constructed before 2025 resulting in a continuous contribution to substantial reduction in energy use throughout the sector.

In order to reach the net zero energy buildings goal by 2025, a series of intermediate goals must be achieved. The following goals are expected to be in the FY 2007 request:

- By 2010, develop technologies and design strategies that can achieve an average of 40 percent reduction in purchased energy use for new residential buildings.
- By 2011, develop technologies and design strategies that can achieve an average of 50 percent reduction in purchased energy use for new, small commercial buildings.
- FY 2007, complete energy conservation standard final rules for residential furnace and boilers, transformers, and commercial unitary air conditioners and heat pump.
- Develop low-cost (target \$20/ft² in 2010), durable (measured by number of cycles to failure, per ASTM standard) prototype dynamic window.
- By 2010, develop Solid State Lighting with efficacy of 142 lumens per Watt in a laboratory device

¹ [2005 Building Energy Data Book, U.S. Department of Energy, Office of Planning, Budget Formulation and Analysis, Energy Efficiency and Renewable Energy. Prepared by D&R International, Ltd., August 2005.](#)



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While initially focused on new construction, these technologies and design approaches will have application to the buildings constructed before 2025. Important breakthroughs include the development of integrated design approaches to ZEB, as well as technology breakthroughs such as solid state lighting and electrochromic windows. Also critical is the promulgation of minimum performance standards for appliances and equipment, per the new Energy Bill.

Our proven history of success, coupled with focusing of our R&D and resources through tough-minded peer review, and the identified technology pathways discussed in this MYP, positions us well for achieving this goal. Additionally, we are working with major private entities through Building America and the competitive solicitation process, producing significant cost-sharing by industry, a clear vote of confidence.

Again, as shown in this MYP, we have arrived at our technology portfolio through rigorous internal evaluations, using objective investment criteria, as well as examining key opportunities offered by our external partners, including industry, universities, and other government agencies. By bringing together relevant stakeholders, the program has been able to build the critical mass necessary to address many of the barriers to increasing the energy efficiency of buildings and equipment. The path to ZEB outlined by BT will show continuous demonstrated success, focusing on incremental steps (such as 30% then 50% for homes) and a series of technical targets.



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